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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/544,126	08/02/2005	Tomohiko Aritsuka	403455	8648
23548	7590	09/05/2007		
LEYDIG VOIT & MAYER, LTD 700 THIRTEENTH ST. NW SUITE 300 WASHINGTON, DC 20005-3960			EXAMINER KAPLAN, HAL IRA	
			ART UNIT 2836	PAPER NUMBER
			MAIL DATE 09/05/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/544,126	Applicant(s) ARITSUKA, TOMOHIKO	
	Examiner Hal I. Kaplan	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6 is/are rejected.
- 7) ☒ Claim(s) 2 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Page 18, lines 2-3 contain the phrase "by connecting not only a capacitor but some other energy-storing device". It is not clear to the Examiner whether the capacitor and the other device can both be connected, or whether either can be connected but not both. Page 18, lines 15-18 state that the DC circuits of the AC-DC converter units can be connected to other AC-DC converter units. This seems to misdescribe the functionality of the system, as the output of the first converter units will be DC and thus would be applied to a DC-DC or DC-AC converter, but not another AC-DC converter. For purposes of this Office Action, the Examiner has assumed that converter units 513 to 543 are DC-AC converter units, as shown in Figure 7.

Appropriate correction is required.

Drawings

2. The drawings were received on June 21, 2007. These drawings are accepted.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1, 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Akamatsu et al. (5,646,511) in view of the US patent of Stoupis et al. (7,154,722) and the US patent of Wilson (5,206,775).

As to claim 1, Akamatsu discloses a series transformer (4A) having a primary winding connected in series with a line and having a secondary winding (see column 4, lines 46-48 and Figure 1); a plurality of array transformers (35) having respective primary (35a) and secondary (35b) windings, the primary windings (35a) being connected in series, wherein the primary windings (35a) are connected to the secondary winding of the series transformer (4A) (see column 4, lines 3-11 and Figure 1); a plurality of AC-DC converter units (36) (input is AC from transformers, output is DC), each AC-DC converter unit (36) having an AC side connected to the secondary winding (35b) of one of the array transformers (35), and a DC side (see column 4, lines 20-37 and Figure 1); and a plurality of mutually independent DC circuits (7), each DC circuit (7) being connected to the DC side of a corresponding one of the AC-DC converter units (36) (see column 1, lines 21-22; column 4, lines 20-37; and Figure 1). Akamatsu does not disclose the claimed normally-on switches, normally-off current bypass devices, or bypass functionality.

Stoupis, drawn to loop control for distribution systems, teaches a technique for isolation of a fault in a segment of a circuit (section of wire 317) via a pair of normally-on switches (302,303) respectively connected in series with the corresponding ends of the

circuit segment which has the fault (see column 8, lines 36-42 and Figure 3C). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to have used the technique of Stoupis to isolate an individual AC-DC converter unit of Akamatsu, if an individual converter has a fault, in order to provide efficient and more robust fault protection. Stoupis does not disclose the claimed normally-off current bypass devices or bypass functionality.

Wilson, drawn to a circuit bypass device, discloses a normally-off current bypass device (30) connected in parallel with a potentially faulty unit (20), wherein, by turning on the current bypass device (30), it is possible to electrically isolate a faulty unit (20). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to have used circuit bypass devices of Wilson to provide a bypass for each of the AC-DC converter units and corresponding series normally-on switches of Akamatsu in view of Stoupis, in order to enable the other converter units to continue to function in the event of a fault, without requiring a repairman to travel to the site of the fault to make repairs.

As to claims 3 and 6, none of the references disclose each of the array transformers including a plurality of transformers connected in series, but it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have used a plurality of transformers connected in series for each array transformer, because it has been held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). See MPEP §2144.04 (VI)(B).

As to claim 4, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have used an additional circuit bypass device as taught by Wilson, connected in parallel with all of the series-connected array transformers and corresponding switches and current bypass devices of Akamatsu et al. in view of Stoupis and Wilson, in order to allow the system to continue to operate in the event of faults in multiple converter units without having to open and close separate switches for each converter unit.

Allowable Subject Matter

6. Claims 2 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: Claims 2 and 5 contain allowable subject matter because none of the prior art of record discloses or suggests the combination of a plurality of AC-DC converter units connected to each of the array transformers at the AC sides of the AC-DC converter units, wherein the DC sides of the plurality of AC-DC converter units are connected to a respective common DC circuit, the common DC circuits connected to the DC sides of respective AC-DC converter units being independent of each other, in combination with the remaining claimed features.

Response to Arguments

8. Applicant's arguments, see Remarks, filed June 21, 2007, with respect to the objections have been fully considered and are persuasive, except for the objections to

the specification set forth above. The objections have been withdrawn, except as set forth above.

9. As to claims 1, 3, 4 and 6, Applicant's argument that Senda does not disclose the claimed mutually independent DC circuits is persuasive. As to the Stoupis reference, the isolated section of wire (fault) has a respective pair of normally-on switches, as set forth above. As noted by Applicant, Stoupis does not isolate transformers; Stoupis is cited for isolation of a fault (in the case of Stoupis a wire) via a pair of normally-on switches corresponding to the fault or device with the fault.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal I. Kaplan whose telephone number is 571-272-8587. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



MICHAEL SHERRY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Art Unit: 2836

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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